

*Milestone innovative technology for  
improving processing quality,  
efficiency and speed*

**MILESTONE**



H E L P I N G  
P A T I E N T S

*... towards the Lean Laboratory concept*



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# Milestone



- An Italian Corporation in Bergamo
- Since 1988 technology leader in microwave applications for analytical and organic chemistry.
- Started in 1994 to transfer know-how to the field of Histopathology.



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# Milestone in the world



Italia - Bergamo  
Warehouse



USA Kalamazoo - MI  
Milestone Medical

# The future of AP?

*ASCO/CAP Guideline Recommendations for Human Epidermal Growth Factor Receptor 2 Testing in Breast Cancer, Arch Pathol Lab Med-Vol 131, January 2007*

## **Results:**

***Approx. 20% of current HER2 testing may be inaccurate***

## **What can be done ?**

# Pre-analytic

Pre-analytic is any process with an impact on the biospecimen, from the moment it leaves the body of the patient until a histological staining procedure is started.



# Milestone tissue-processors



## KOS

Rapid manual microwave tissue processor.  
Up to 3mm, 45 cassettes.



## Histos 3/5

Semiautomatic microwave tissue processor.  
Up to 3 or 5mm, 110 cassettes.



## LOGOS J

"Personal" hybrid tissue processor



## LOGOS

All-in-one hybrid tissue processor



## Pathos DELTA

World's first hybrid tissue processor.



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# The semi-automatic line



**KOS**



**HISTOS 5**

- Rapid Tissue Processing
- Rapid Decalcification
- Special Stains
- Antigen Retrieval
- Gross Hardening
- EM processing

# The Automatic line



**LOGOS J**



**LOGOS**



**Pathos DELTA**

- Rapid tissue Processing
- Optimized workflow
- Xylene free



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# The Milestone line

	 KOS	 Histos 3	 Histos 5	 LOGOS J	 LOGOS	 Pathos Delta
<b>Automatic</b>				✓	✓	✓
<b>Semiautomatic</b>	✓	✓	✓			
<b>Simultaneous dual run</b>		✓	✓	✓	✓	
<b>Specimens number</b>	45	110	110	48	up to 420	up to 300
<b>Tissue thickness</b>	max 3mm	max 3mm	no limit	max 3mm	no limit	no limit
<b>Hybrid (rapid+conventional)</b>				✓	✓	✓

# Logos



*Like your conventional.  
And more.*



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**Hybrid.  
Flexible.  
Fast.  
Safe.  
Economical.**



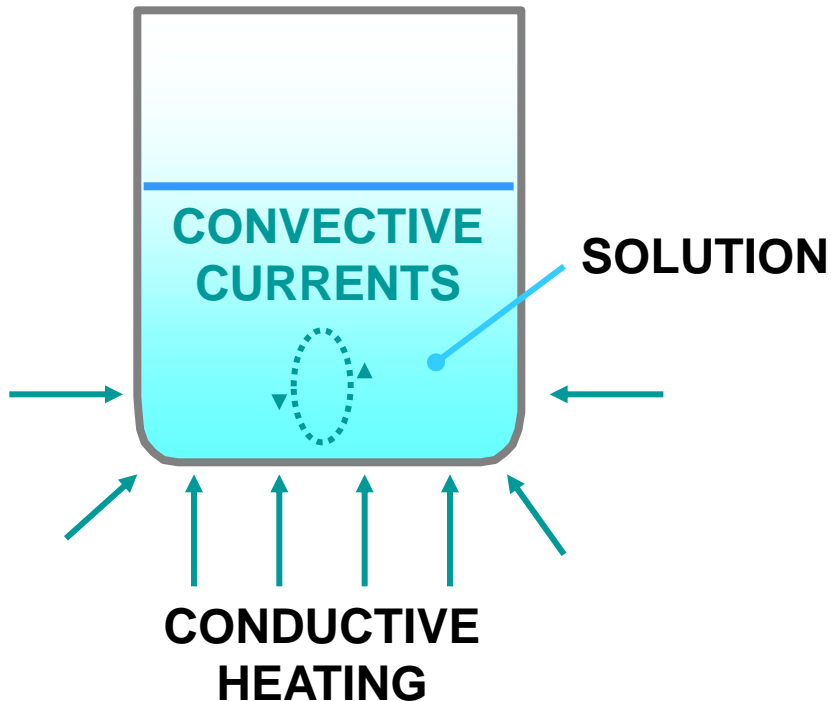
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# Hybrid technology

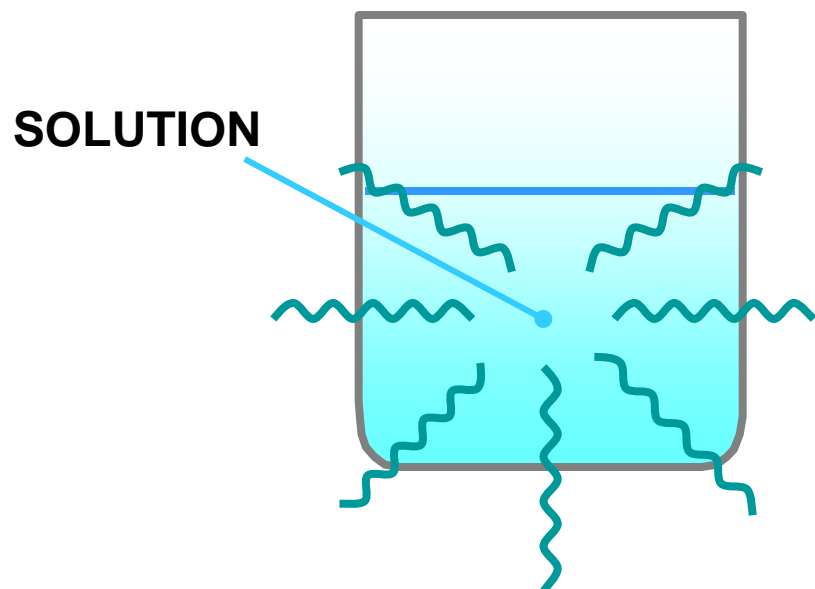
# Conventional Heating

**The temperature of the outside surface of the vessel is in excess of the boiling point of the solution**

**Container is heated first, then the solution.**

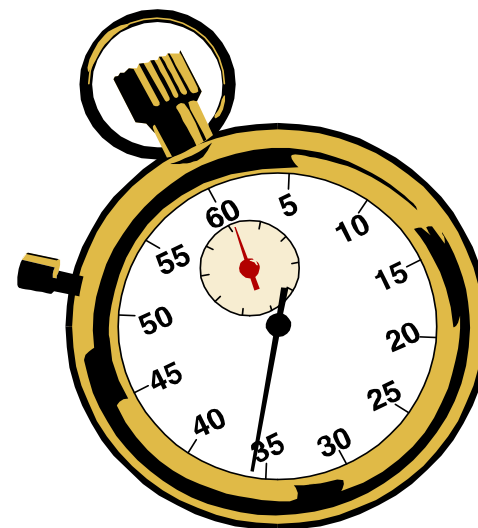
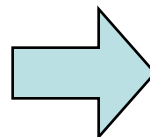


# Hybrid heating



**HYBRID HEATING**

**Volumetric heating  
homogeneous**

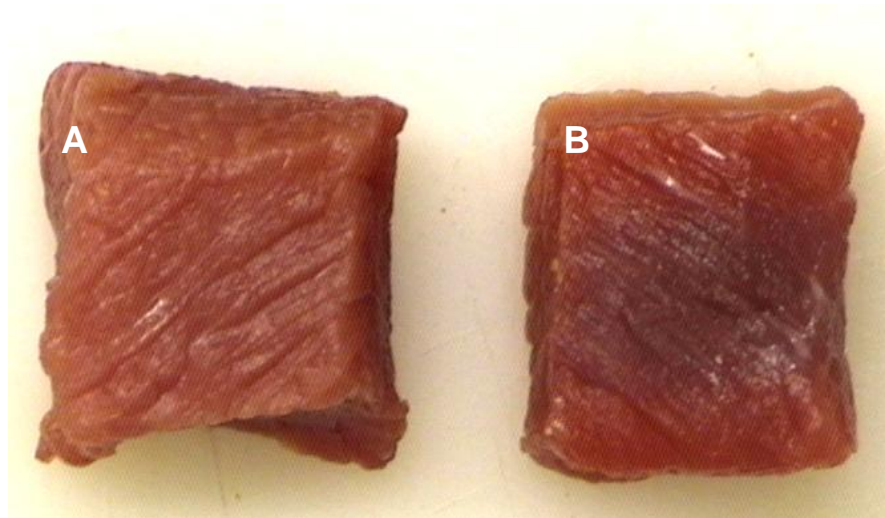


**Shorter Reaction  
Times**

# Hybrid effect

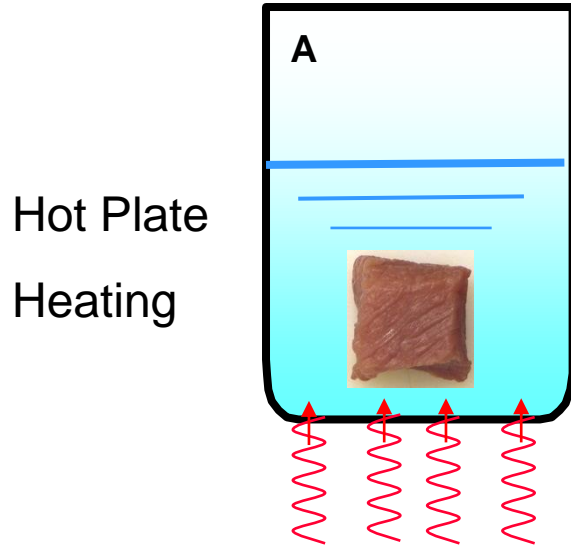
- Experimental proof:

Fresh sample of animal's muscle were sectioned in two mirror blocks , approximately 8cm<sup>3</sup> each (20x20x20mm)

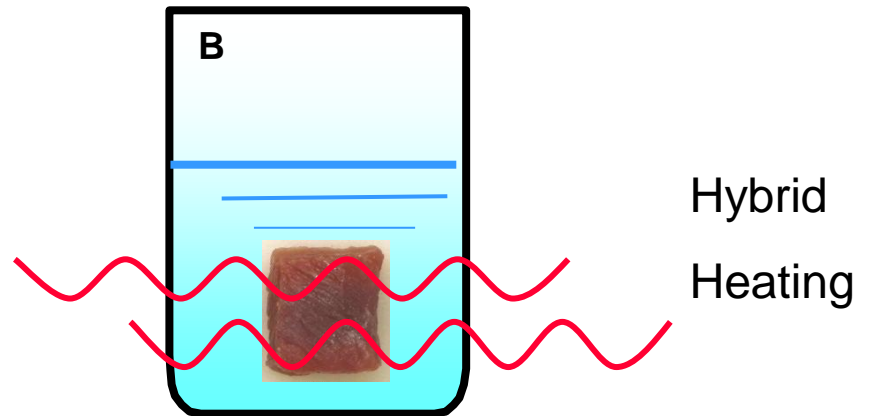


# Hybrid effect

**Place a beaker containing 100ml Ethanol on an electronic hot plate. Set the temperature at 70°C. When temperature is reached immerse the specimen A in this solution for 5 minutes.**



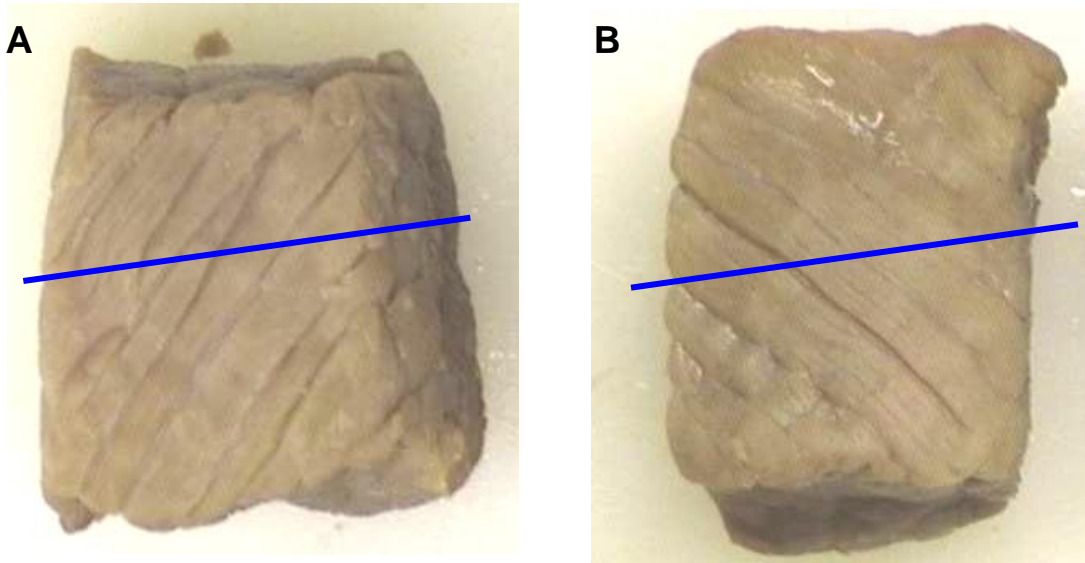
**Place a beaker containing 100ml Ethanol in a Milestone tissue processor. Set the temperature at 70° C. When the temperature is reached immerse the specimen B in this solution for 5 minutes.**





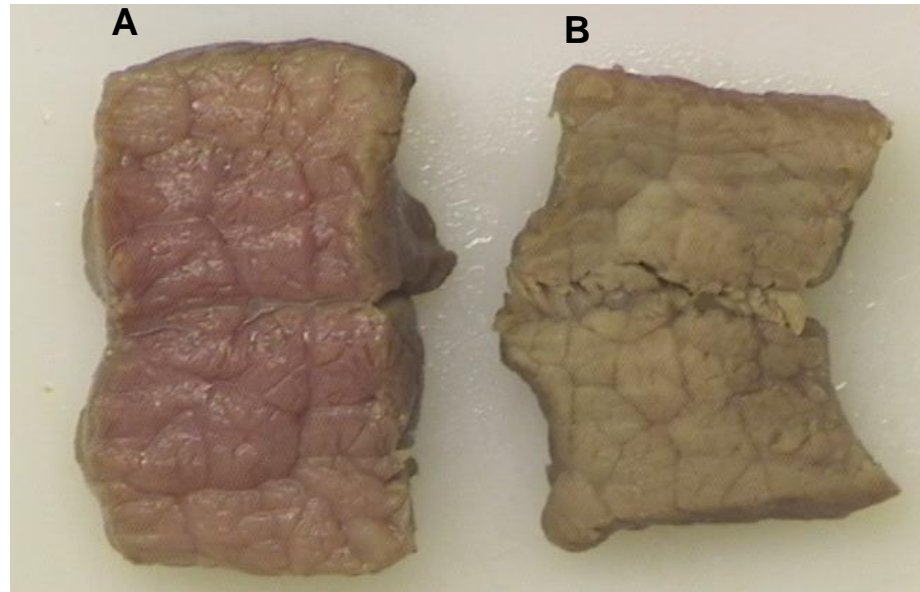
# Hybrid effect

**After 5 minutes samples were removed from respective solution**



**...and immediately bisected**

# Hybrid effect



CONVENT HEATING

HYBRID HEATING

**Slight hardening in the outer part only**

**No sign of alcohol penetration and dehydration in the internal area.**

**The specimen was still soft**

**Complete dehydration/hardening in the total area, indicated by the color change**

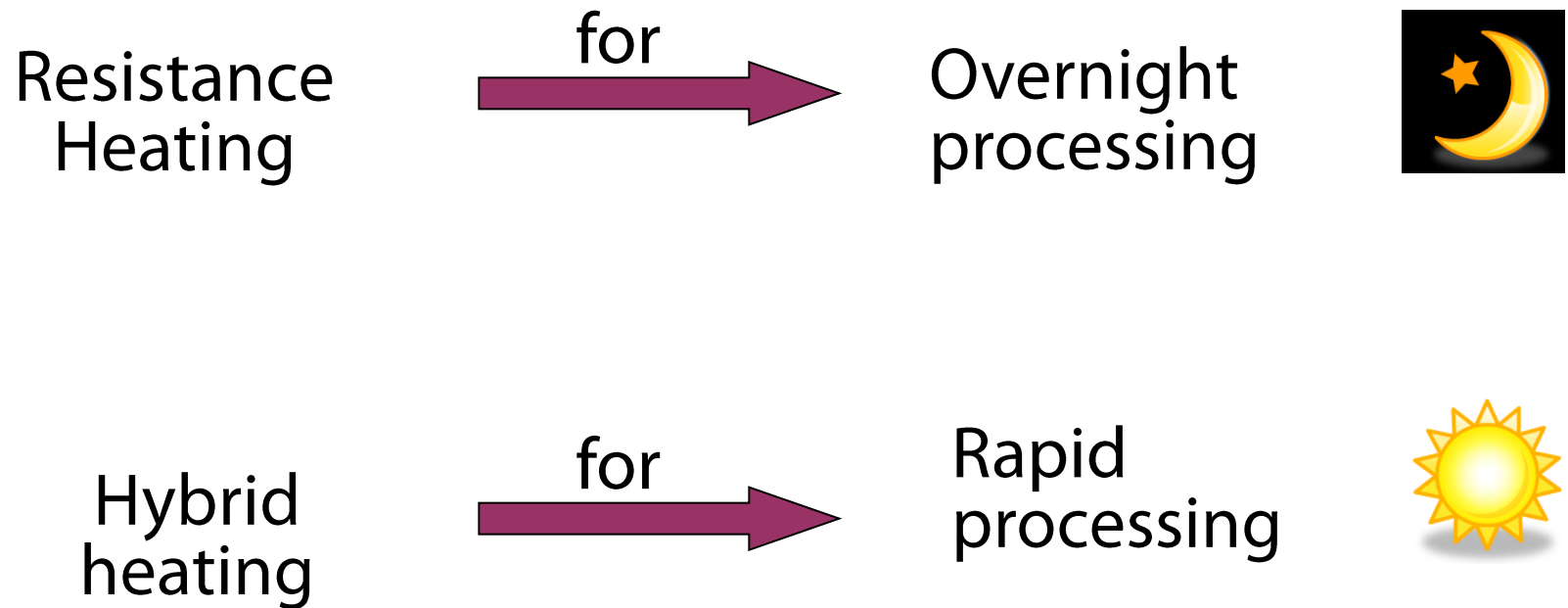
**The hybrid tech stimulated the diffusion of alcohol into the inner area.**

# Flexible



- Whatever kind of tissues, thickness ( $>8\text{mm}$ ).
- Any kind of fixative.
- Process blocks as required.
- Throughput: Up to 210 + 210.

# Flexible



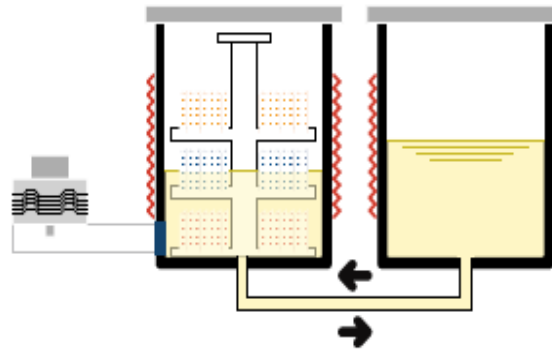
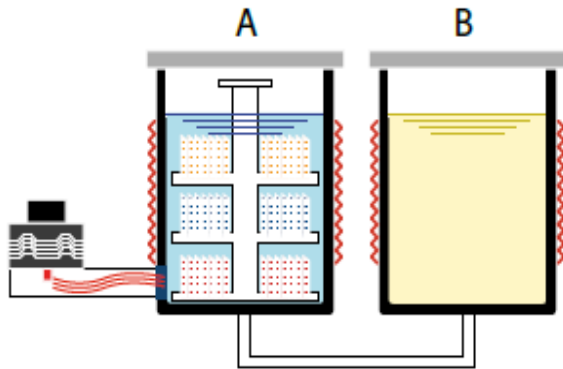
# Logos efficiency

## 1- Rapid tissue processor



### Day Operation (1)

As a fully automated, single retort, **rapid hybrid tissue processor**



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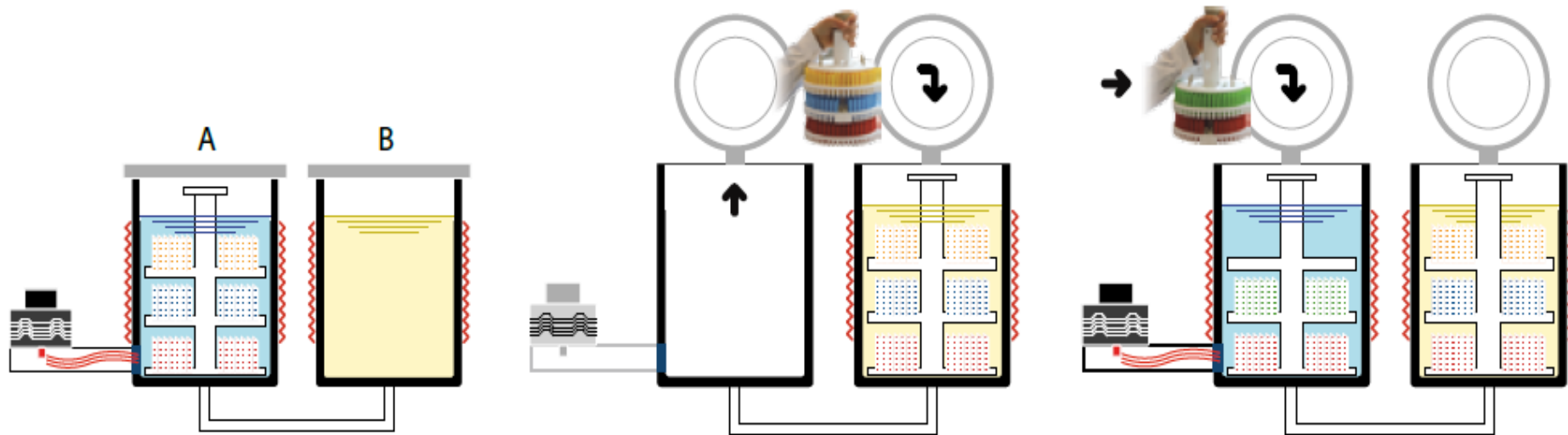
# Logos efficiency

## 2- Dual run



### Day Operation (2)

As a sequential, dual retort, **simultaneous batch hybrid tissue processor**



***Continuous loading***

***No Cleaning cycle***

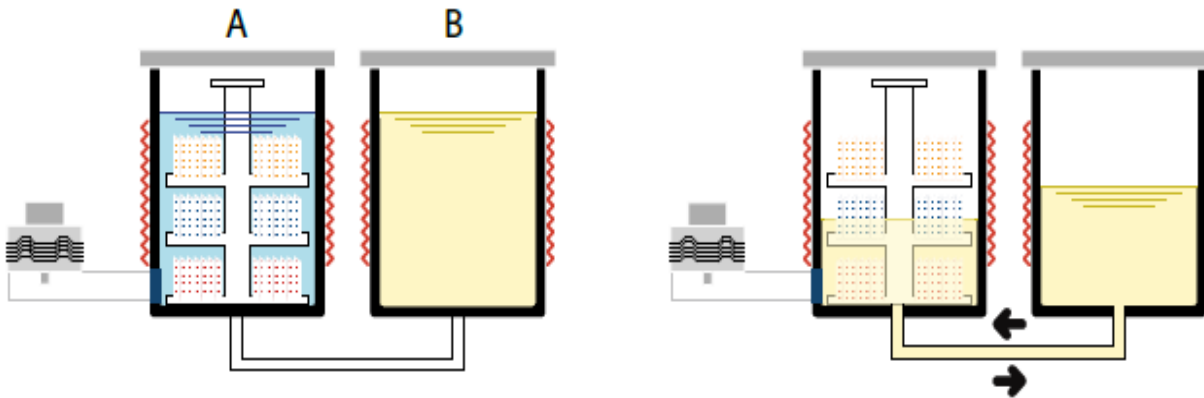
# Logos efficiency

## 3- O/N Conventional



### Night Operation

As a fully automated, single retort, **overnight conventional tissue processor**



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# Fast

## Unmatched processing times

Six times faster than conventional processing  
enabling same-day diagnosis



Specimen thickness	Workflow with rapid protocols. Fully automated	Improved workflow with parallel processing in continuous batch mode
1 mm	Full batch* every 1 h 15 minutes (including fixation)	Full batch* every 40 minutes
3 mm	Full batch* every 3 h 17 minutes (including fixation)	Full batch* every 2 hours
5 mm	Full batch* every 5 h 50 minutes (including fixation)	Full batch* every 3 hours 40 minutes

*\* Up to 140  
cassettes with  
1 gallon and up to  
210 cassettes with  
5 liters reagent jars*



Packed with the latest technology for improved work environment

*"Soft-close" cover for enhanced safety*

*Heated PTFE coated internal surface to avoid condensation of reagents for consistent processing and enhanced operator safety*

*Swing-up control panel cover for easy access to condensation traps*

*Easy, safe transfer of exhausted wax through heated PTFE connector*

Open system.  
No proprietary reagents commitments.  
Use of histology grade wax.


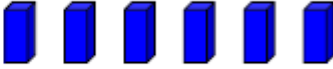
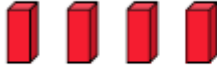

**No transfer of reagents to tanks**

*Slide-out ventilated reagent drawer. Direct transfer of solutions in processing retort from commercial jars (5 lt or 1 gal)*


**Safe.**

# Economical.

## Traditional Tissue Processing: 8-12 hours

Fixation	Dehydration	Clearing	Infiltration
			



Fixation	Dehydration	Clearing	Infiltration
			

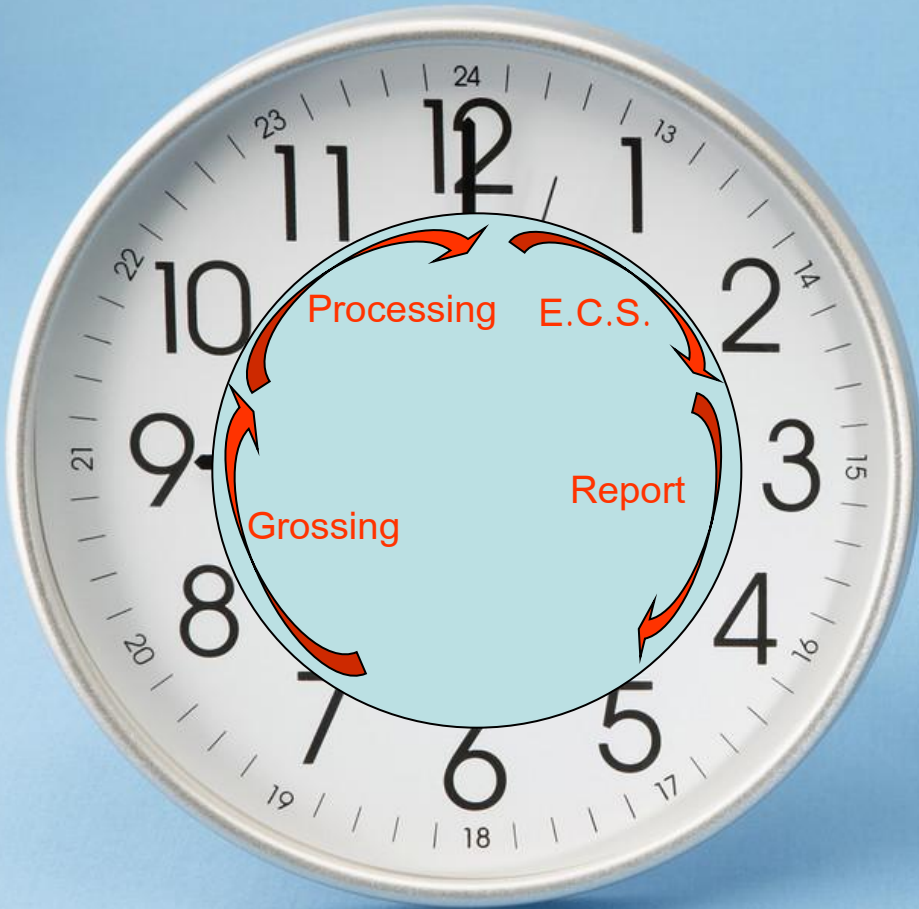


**Case study:** 300 cassette/24hours laboratory



**Case study:** 300 cassette/24hours laboratory

Day 1



O/N Processing  
for large/routine  
samples

# Benefits

- Same-day + overnight processing in one unit
- Improved work-flow of Laboratory (reduced backlog of cassettes).
- No toxic reagents
- Reduced running cost and maintenance (no cleaning cycles)
- High quality slides



MILESTONE + KLINIPATH  
**synergy**<sup>TM</sup>



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# Embedding

## ***High workload task:***

Hundreds of samples to be manually embedded/positioned

## ***Impact on laboratory workflow:***

Manual Operation and Time Consuming step.

Bottleneck within the laboratory workflow.

## ***Quality:***

Dedicated personnel have to grant a correct Tissues Orientation.

Orientation and quality may differ .



*A new era  
for embedding  
is starting...*



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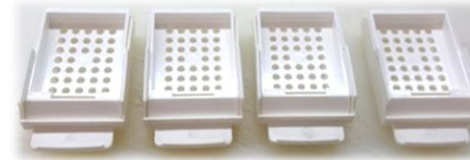


# What if embedding...



## ...is completed in a tissue processor?

# Synergy



Special rack and dedicated accessories  
for ***processing & embedding*** in ***one step***

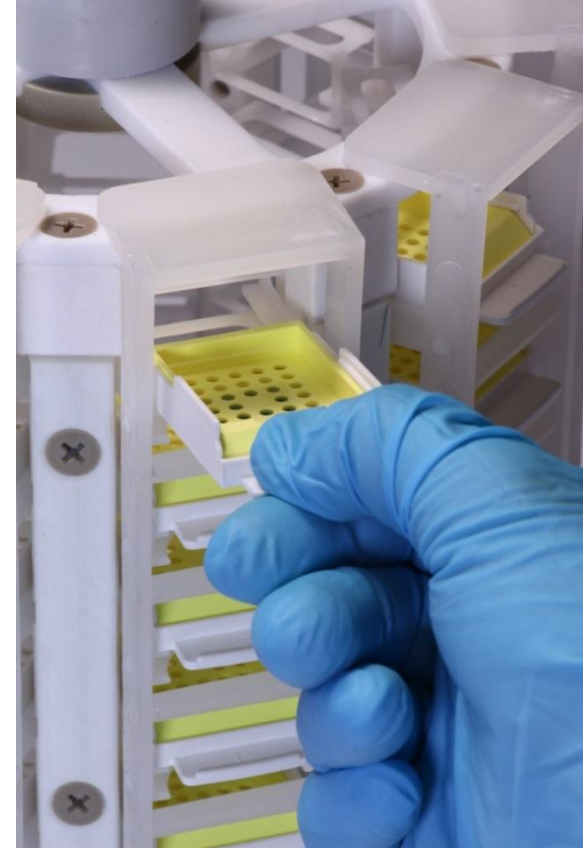
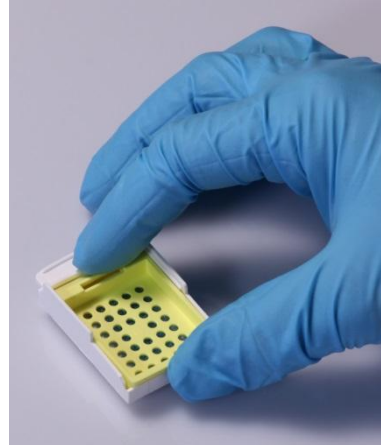


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HELPING  
PATIENTS



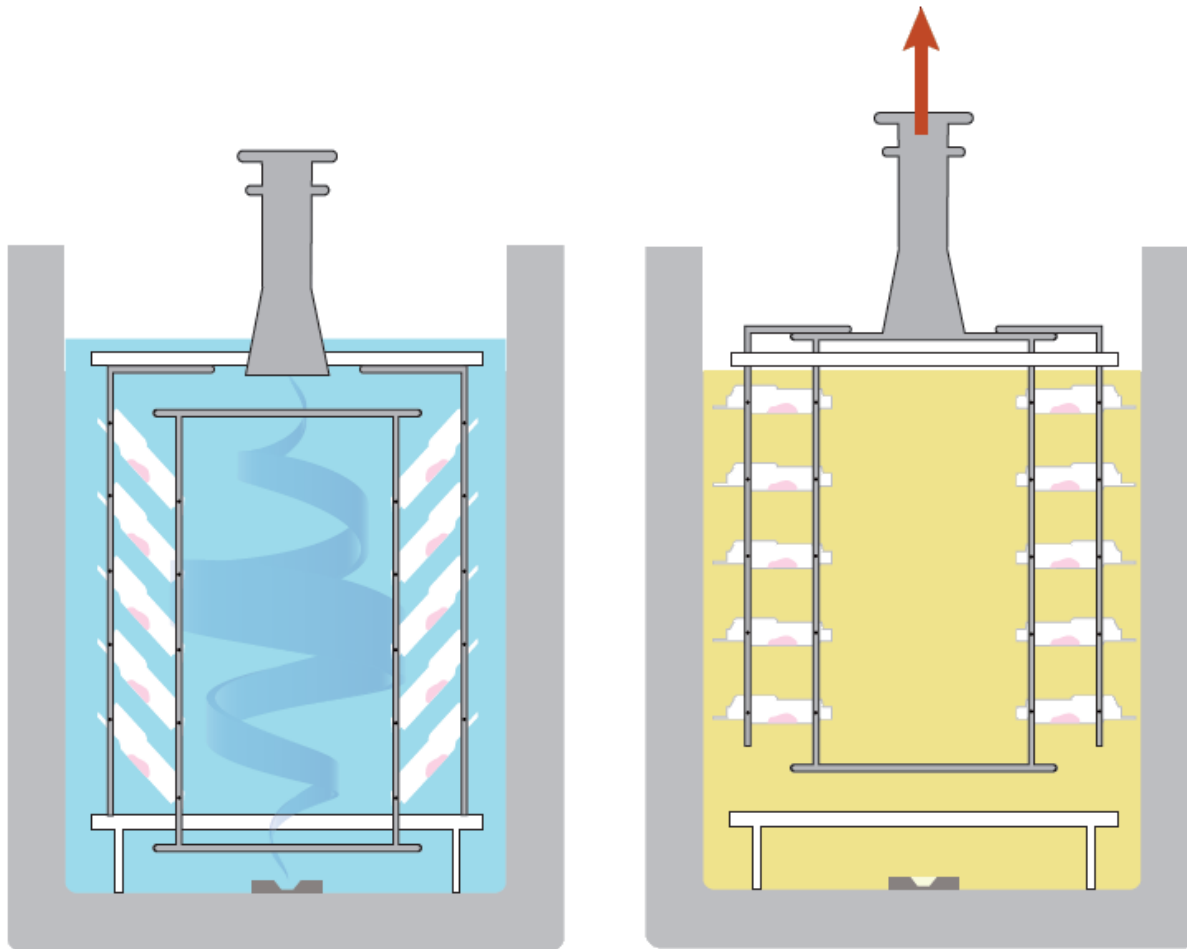
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**synergy**

# Before tissue processing

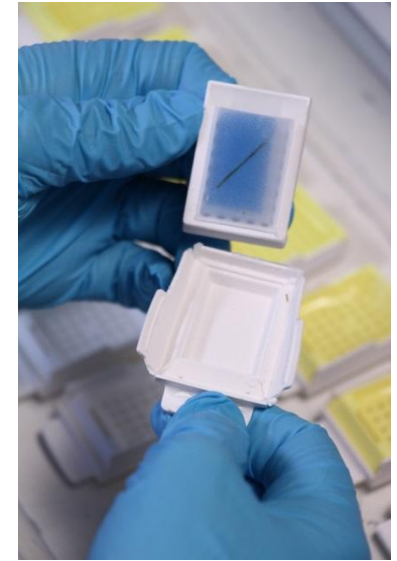


Small biopsies positioning

# The processing method

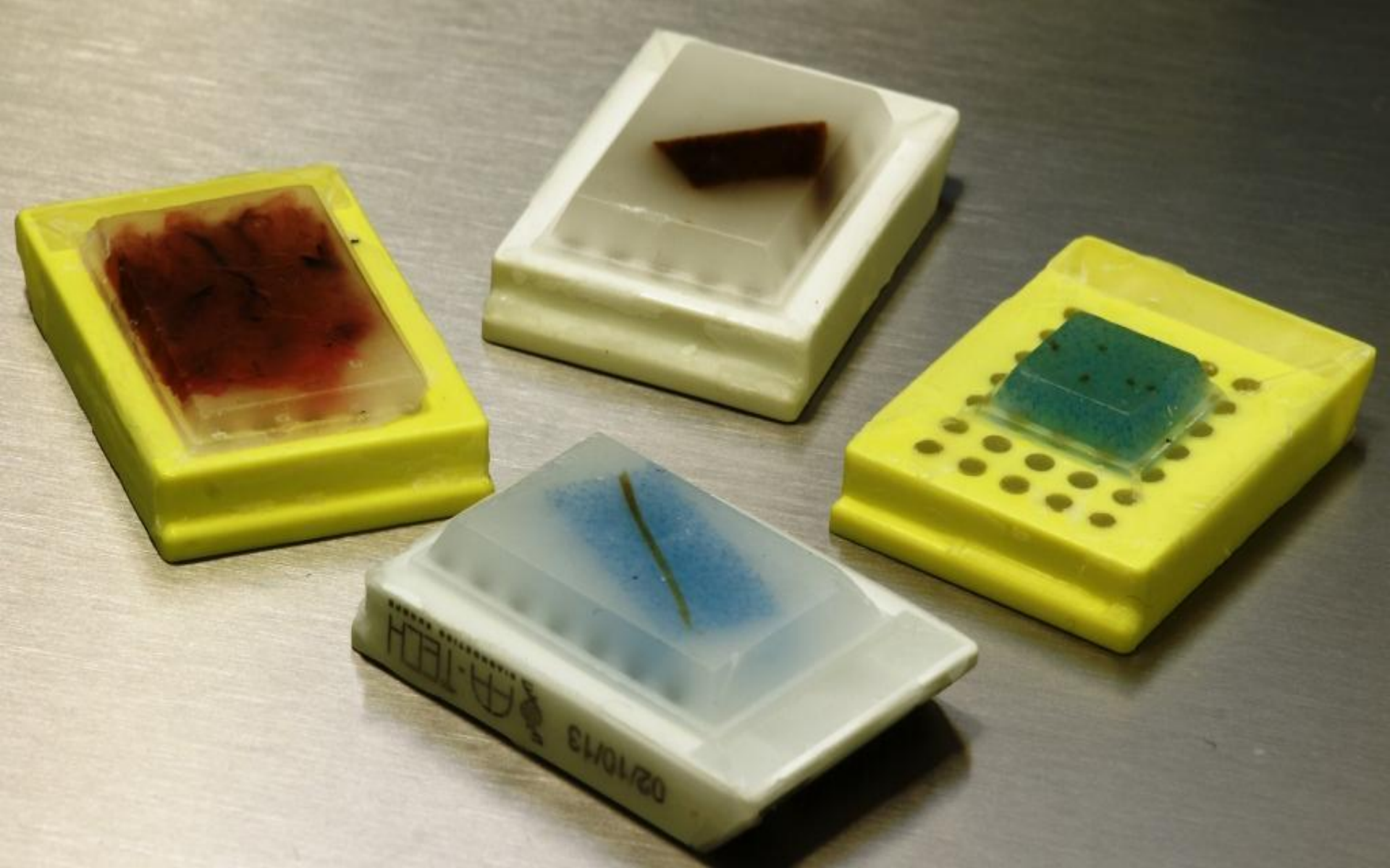


# After tissue processing



Cassette unloading  
& cooling



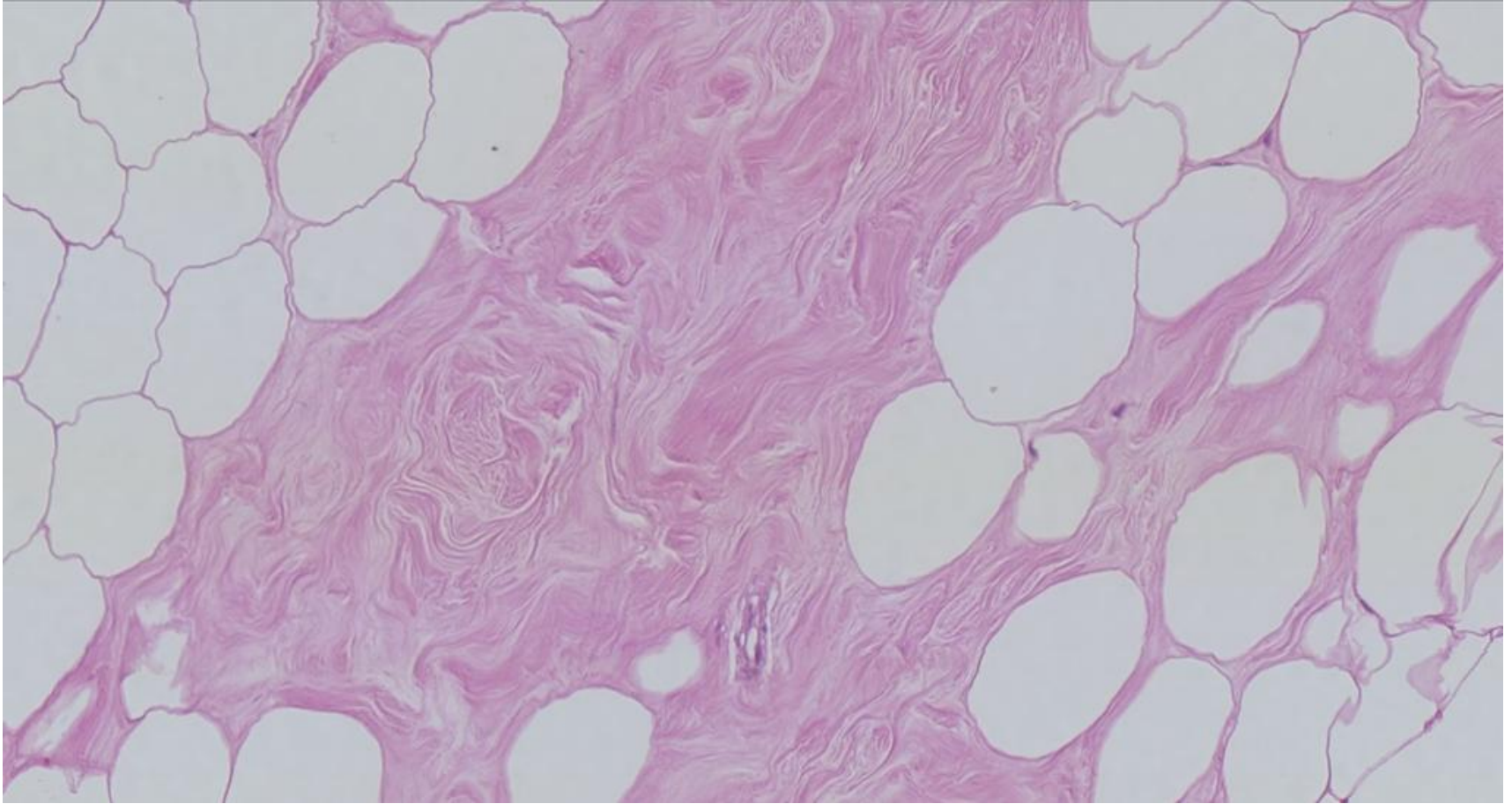


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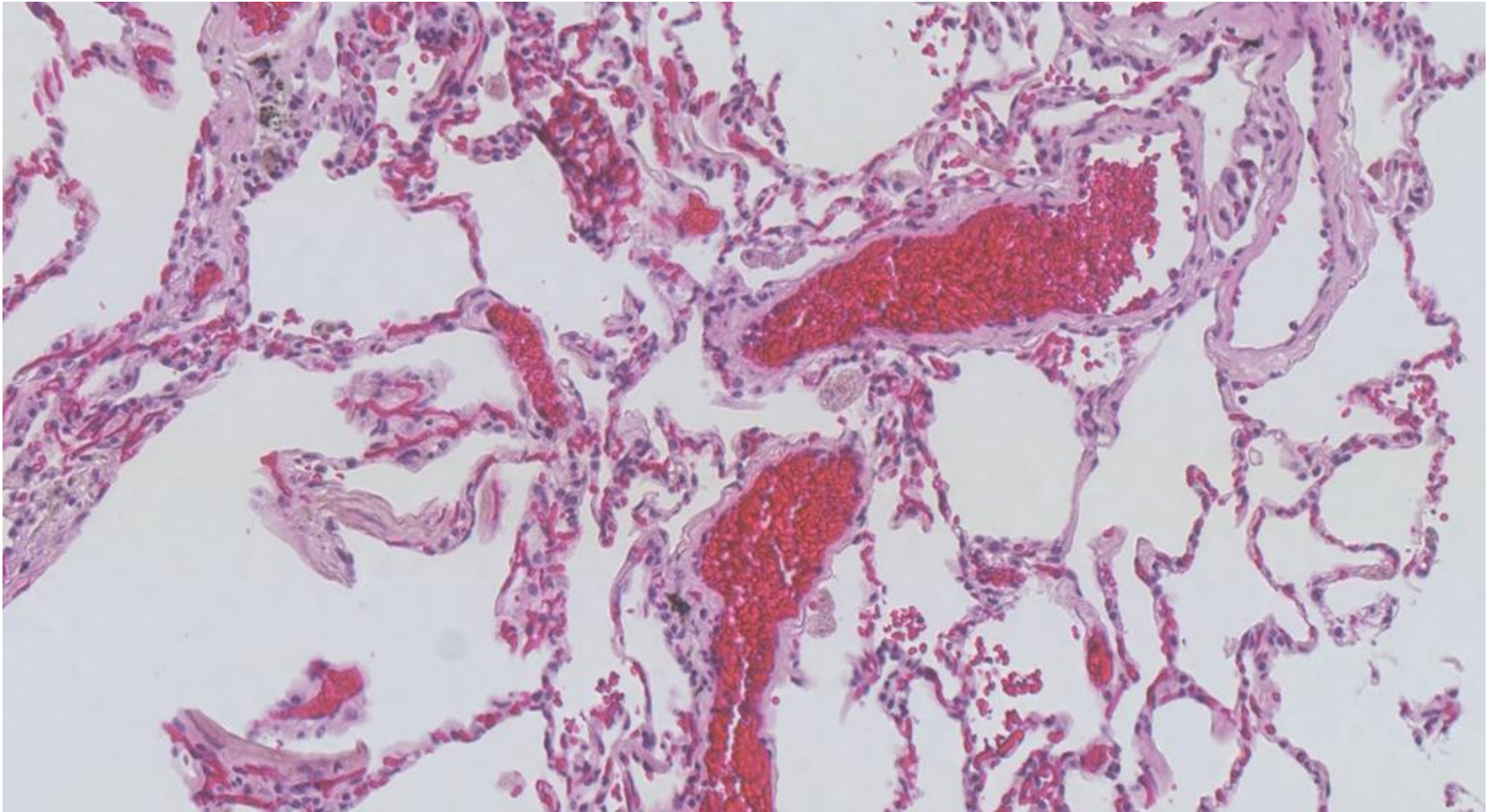
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**synergy**

# Equivalent morphology



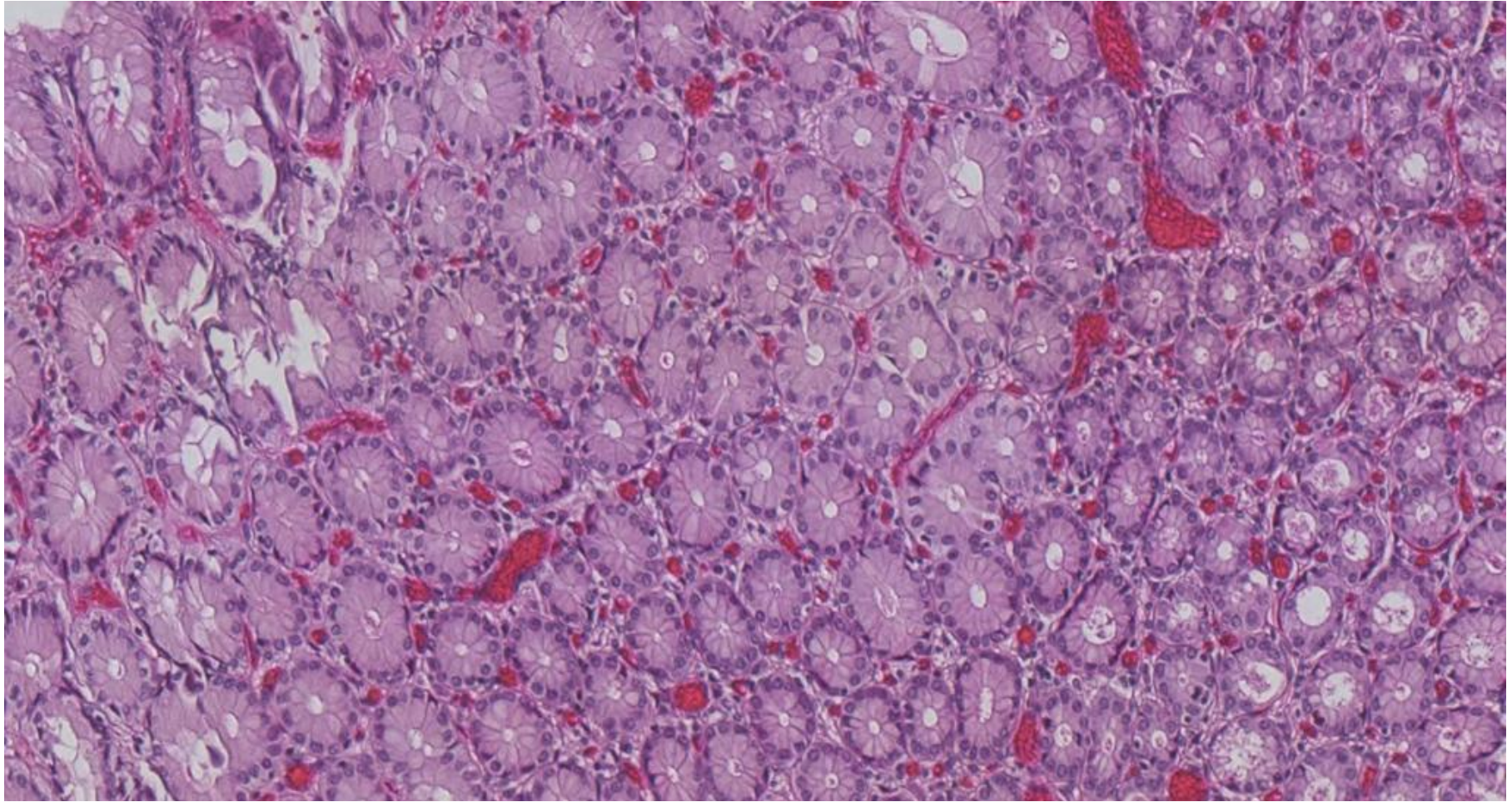
Breast 20x, 2h program Pathos Delta, Eth-Iso





Lung 20x, 5h program Pathos Delta, Jfc-wax





Colon 20x, 5h program Pathos Delta, Jfc-wax

# The Synergy benefits:

- Processing and embedding in 1 unit
- Affordable purchasing price
- Irrelevant maintenance cost

*Grazie*



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